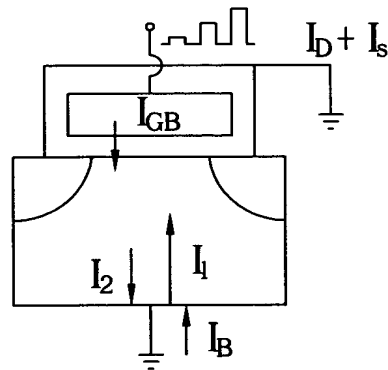




Replacement sheet

- Charge Pumping (CP) Setup

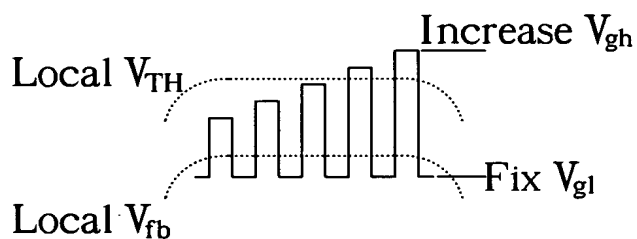


- $I_B = I_1 - I_2$
= Recombination Current
= CP Current (I_{CP})
- I_{GB} = Gate-Bulk Leakage

Fig. 1a



Replacement sheet



Equation for extraction N_{it}

$$I_{CP,max} = f q W L N_{it}$$

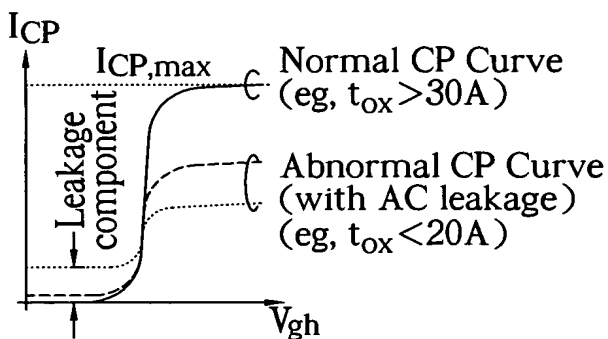
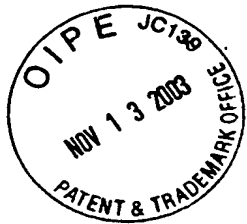


Fig. 1b



Replacement sheet

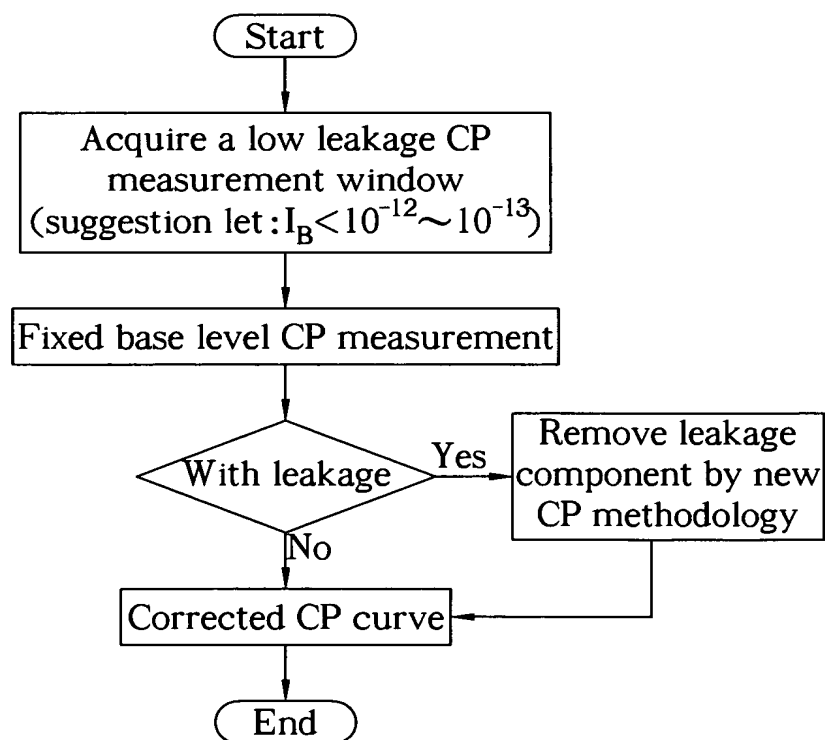


Fig. 1c



Replacement sheet

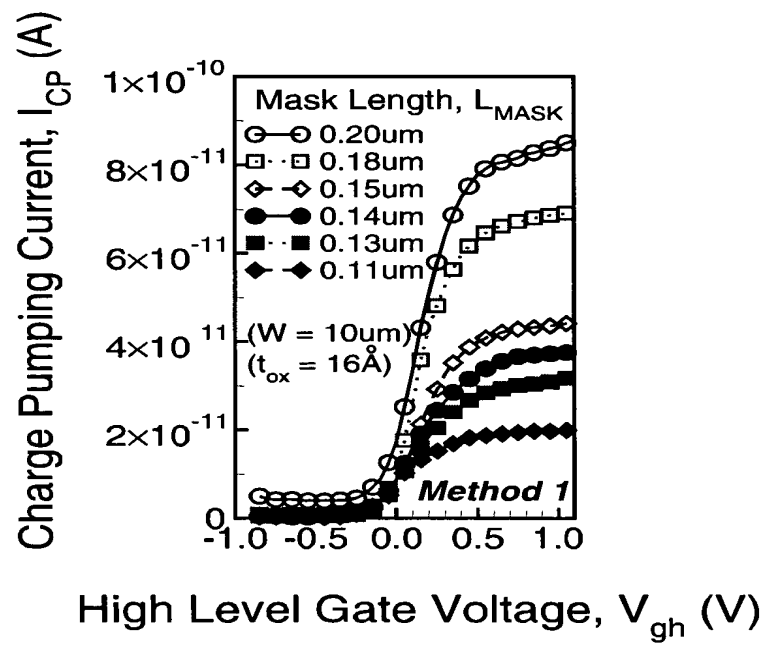


Fig. 3

Replacement sheet

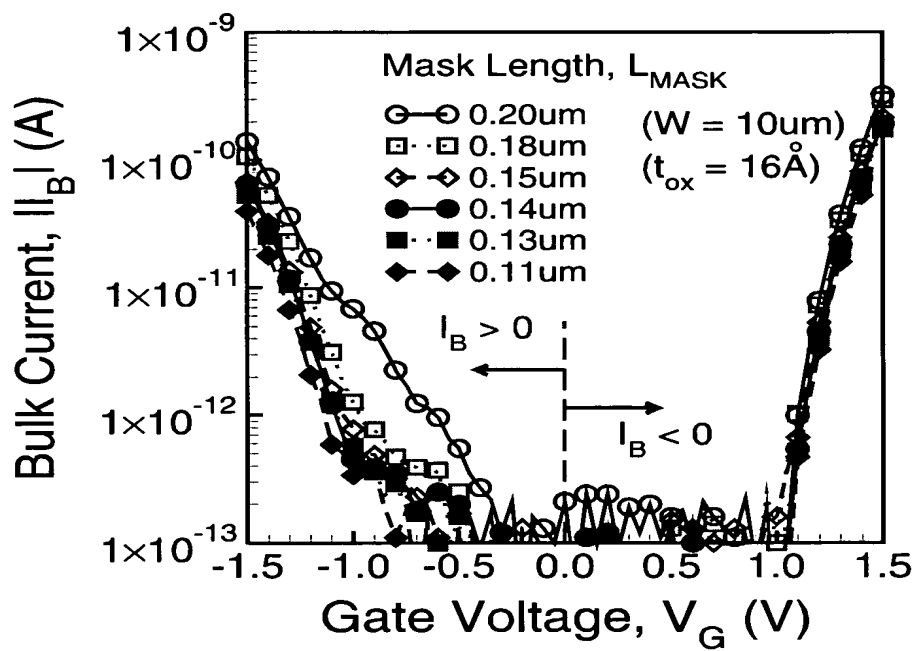


Fig. 4



Replacement sheet

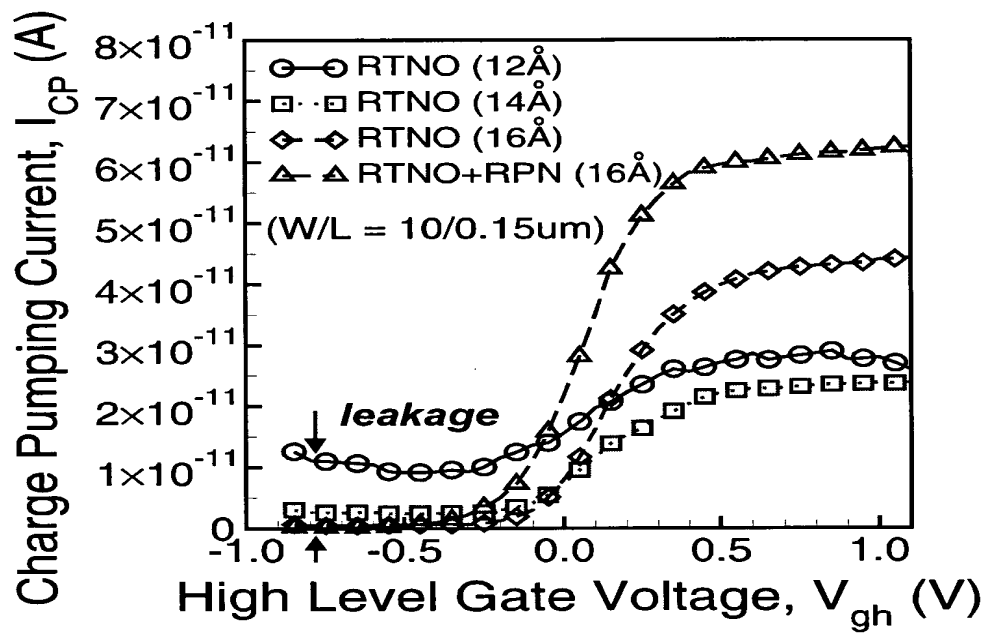


Fig. 5



Replacement sheet

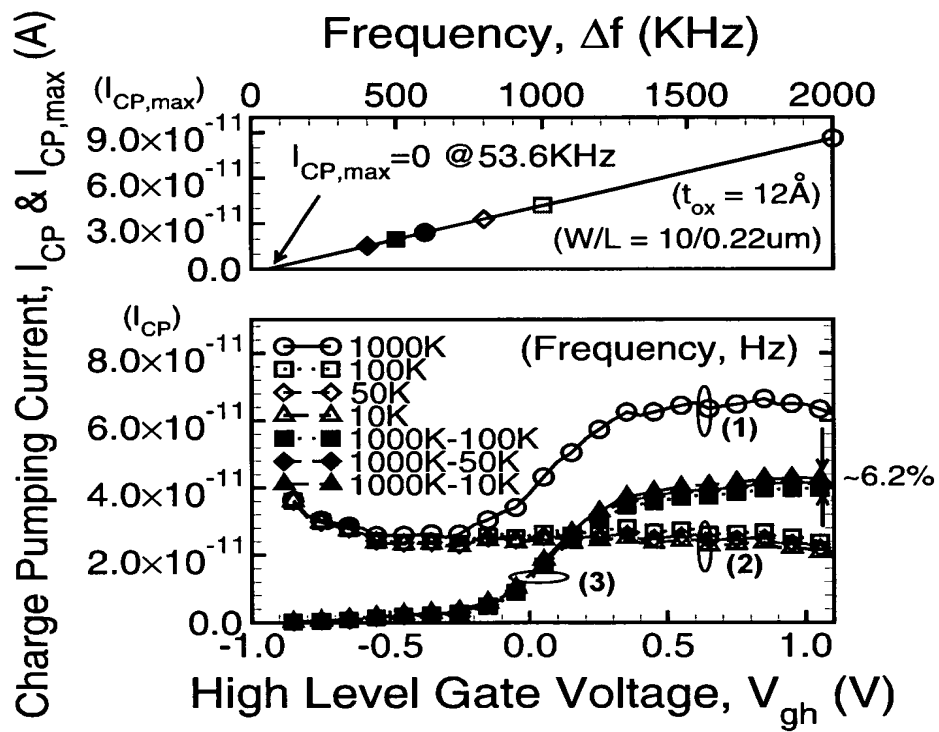


Fig. 6



Replacement sheet

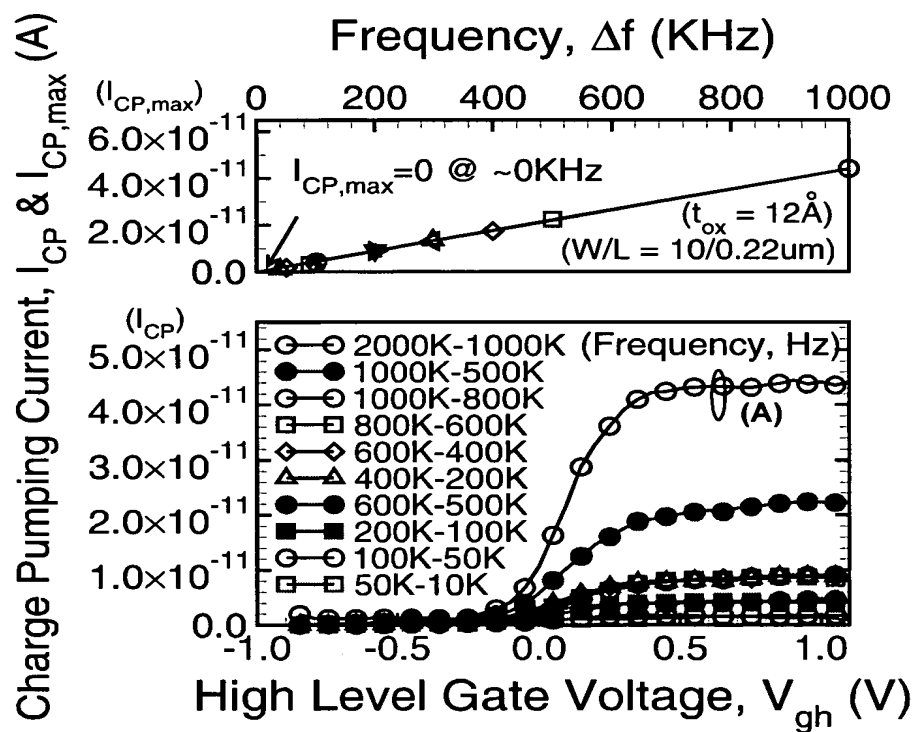


Fig. 7



Replacement sheet

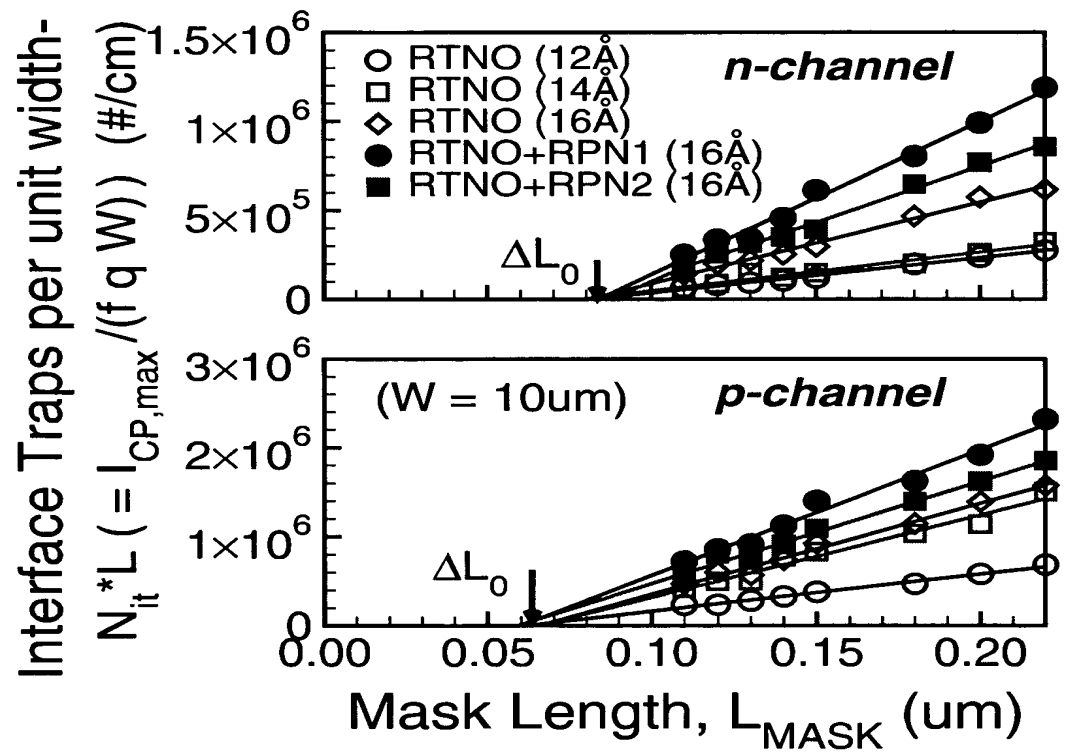


Fig. 9

Replacement sheet

$$\begin{aligned}
 (1 \text{ a}) \quad L_{\text{MASK}} &= L_{\text{gate}} + 2 * \frac{\Delta L_1}{2} = L_{\text{gate}} + \Delta L_1 \\
 (1 \text{ b}) \quad L_{\text{gate}} &= L_{\text{eff}} + 2 * \frac{\Delta L_2}{2} = L_{\text{eff}} + \Delta L_2 \\
 (1 \text{ c}) \quad \Delta L_0 &\approx \Delta L_1 + \Delta L_2 \\
 (2 \text{ a}) \quad N_{it,1,\text{total}} &= N_{it,11} + N_{it,12} \\
 (2 \text{ b}) \quad N_{it,2,\text{total}} &= N_{it,21} + N_{it,22} \\
 (2 \text{ c}) \quad \Delta I_{CP,\text{max}} &\propto \Delta N_{it,\text{total}} = N_{it,1,\text{total}} - N_{it,2,\text{total}} \\
 &= (N_{it,11} + N_{it,12}) - (N_{it,21} + N_{it,22}) \\
 &\quad (\text{ if } N_{it,11} \approx N_{it,21}) \\
 &= N_{it,12} - N_{it,22} \propto \Delta L
 \end{aligned}$$

Table 1

Fig. 10